ONTARIO

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DEPARTMENT OF LANDS AND FORESTS

HON. A. KELSO ROBERTS Q.C., MINISTER F.A. MACDOUGALL, DEPUTY MINISTER

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REVIEW

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THE COVER

The fine white-tailed deer on the cover may cause some deer hunters to feel a certain frustration especially at this season of the year. Deer often frequent open space, though near protective cover. (See Report by J.B. Dawson on Page 3.) The back cover offers photographic proof that fishing for lake trout can be a rewarding pastime. Both photos by R. Muckleston.

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EDITORIAL

There ought to be a law . . . . . .

This hunting season, if it follows the trend established in the last few years, will result in about 120 hunting accidents of which 15 will be fatal. There will be expressions of alarm from the public, and newspapers and other media will call for the banning of firearms and describe hunting as savage and barbarous. There will be demands for new restrictive laws.

Will new laws really help the situation? Let us look at the two or three main laws which already bear on the use of firearms. The Criminal Code has for many years provided that everyone is criminally negligent in doing anything which shows wanton or reckless disregard for the lives or safety of other persons.

Provision to establish a hunter safety training program was introduced in The Game and Fisheries Act in 1958. Careless hunting became an offence in 1961, since it had been shown in some cases that the element of wanton or reckless disregard necessary to establish criminal negligence had been lacking, yet the manner in which a firearm had been used showed lack of reasonable consideration for persons or property.

In North America, from 1951 to 1960, 53 per cent of the total hunting accidents were due to *unintentional* discharge of guns. Of the accidents which occurred, where the firing of the gun was intentional, 63 per cent took place at a distance of fifty yards or less, under conditions of clear visibility and light or open cover. Forty per cent of the victims were wearing brightly coloured clothes. In many of these cases, the hunter was swinging quickly on game, or the victim walked into the line of fire. Unfortunately, a high proportion of the victims were mistaken for game even at short range.

During the ten-year period ending in 1960, about 35 per cent of the casualties, fatal and otherwise, were self-inflicted. The age group from 16 to 20 and those who lack hunting experience made a substantial contribution to the total number of accidents, but a large number of accidents were caused by hunters with ten years or more of hunting experience.

The main causes of accidents associated with unintentional discharge of firearms include those where the hunter stumbled and fell; the trigger caught on the brush; the bullet ricocheted; a loaded gun was being placed in, removed from, or carried in a motor vehicle; the weapon fell from an insecure resting position; the hunter was trying to load or unload his gun, or was attempting to climb a fence.

Most gun accidents do not need to happen. There is usually a substantial element of negligence or carelessness involved. Anxiety—desire to fill bags—competition for game—or just plain greed is frequently a factor in hunting accidents. It is not by chance, then, that many of those who cause such accidents are already breaking the law by carrying a loaded firearm in a vehicle—or, as in one particularly serious case, a canoe-borne night hunter was shot and killed by another hunter who,

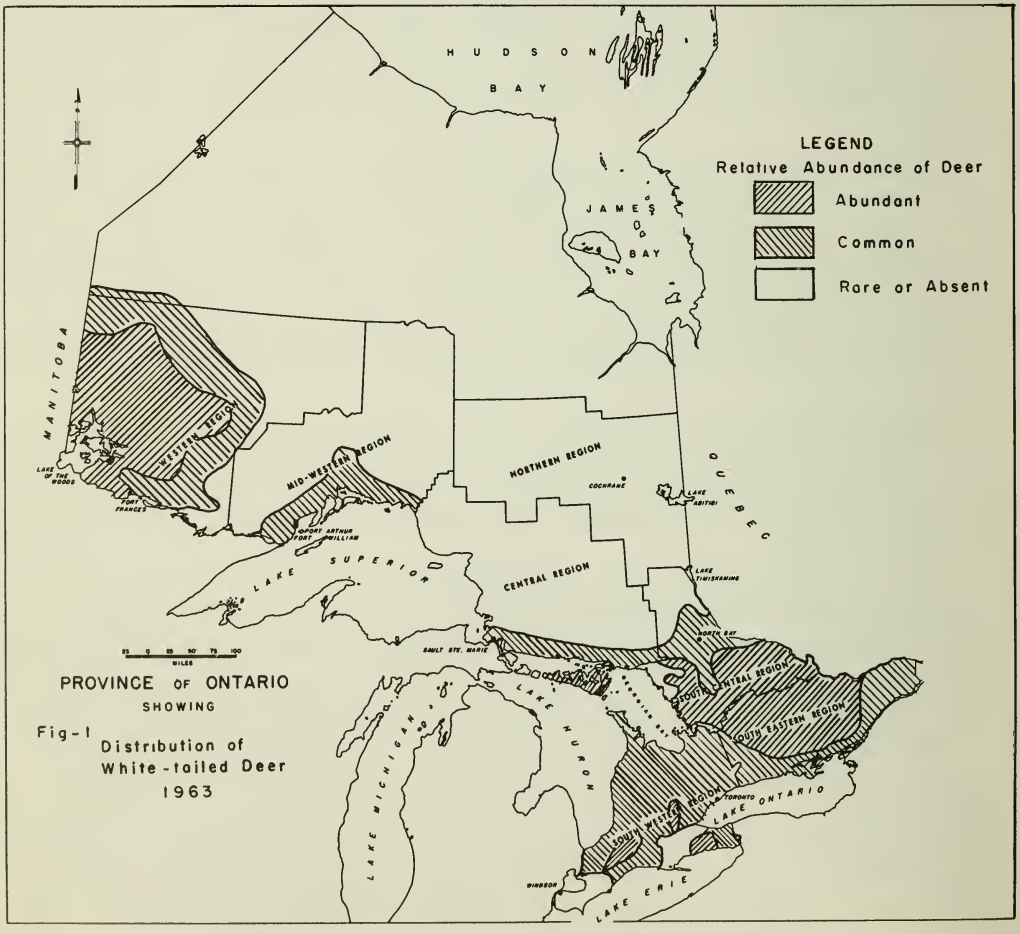
in the darkness, mistook the splash of a paddle for the movement of a moose.

Failure to consider the probable consequences of an action is a common underlying cause of many accidents, as was the case with the hunter who killed himself while clubbing a wounded rabbit with the butt of his loaded shotgun. Had the victim been someone else, the hunter would surely have been guilty of careless hunting!

Would new laws really reduce the accident toll where most accidents happen at short range and are due to greed for game or utter failure to recognize that the other fellow is there? Would a law requiring all hunters to wear brightly coloured clothes help when the victim is in plain view, or not even a hunter?

A law leading to enlightenment is the best kind. Thus, the provision of a hunter safety training program is gradually leading to the realization that common sense, courtesy and observance of the game laws is much more important than filling the daily bag limit. The record of achievement is perhaps beginning to show, for there has been a decline in accidents in the last three years, and in 1962 the number of fatalities was less than half that in 1960.

The real challenge is to find the means of influencing those who carry guns in the field to live up to what they already know. The creation of new laws may very well lead only to new problems.



PROVINCE OF ONTARIO
SHOWING
Fig-1 Distribution of White-tailed Deer
1963

THE WHITE-TAILED DEER IN ONTARIO
PAST, PRESENT AND FUTURE

by J.B. Dawson
Biologist, Southern Research Station

For many people, holidays and 'the good old summertime' go hand in hand. Not so for a large proportion of Ontario's hunting fraternity who would not trade a week in bleak November for any other time of year.

This is understandable only to those who catch 'white-tail fever' each autumn and especially to those who have experienced the annual good times of a deer hunt camp. Deer hunting in any form is good sport, and much can be said for the lone hunter who stalks or still hunts, for archers or for those who trek out from town in small groups on weekends for a day's hunt. However, those who have not experienced deer camp life with old hunting cronies truly have missed one of life's richer experiences.

For some, and for wives especially, it may be difficult to appreciate just why a week's sojourn in a drafty, smoke-cured camp, cottage, tent or trailer with a crew of unshaven deer-slayers is so vitally important to so many men. For those who have stood watch on a frosty morning "at the twin maples" or "between the creeks", who have listened to the music of the hounds coming over the hogsback and who have attempted to sort out whether those dry leaves were rustled by a frisky squirrel or a "sneaker" coming out well ahead of the dogs, the question really requires no comment. They just wouldn't understand anyhow! The sceptics would understand even less the wet socks, lack of sleep, tall tales, unending practical jokes and the upper bunks which are inevitably the hottest places this side of Hades in late evening and oh, so cold only a few hours later.

I suspect that the lure of camp life is a major factor in persuading well over 100,000 hunters to pursue the white-tail each year in Ontario.

The white-tailed deer is certainly the most important species of big game resident in North America. One or more of thirty subspecies is found in almost every State and Province, and, while civilization has pushed most big game into wilderness areas out of the reach of many hunters, deer thrive within a few miles of metropolitan centres. Deer are Mr. Average Hunter's big game, and well over six million hunters pursue the white-tail across the United States and Canada.

About 30,000 deer are taken in Ontario each year—about one for every four hunters. Although this may appear to be a large quantity of venison, it is a relatively small proportion of the total harvest taken across the continent. Several states, for instance, have had annual harvest exceeding 100,000 animals.

WHERE, WHEN AND WHY?

Before outlining the past and present distribution and abundance of deer across the Province, let us briefly examine the principal factors which influence their welfare.

This Province is situated at the northern margin of the continent's deer range, and white-tails are scarce or absent over much of northern Ontario. Winter climate limits the distribution of

* Much of the historical data presented here was taken from the Research files of the Department. Mr. John Macfie, Senior Conservation Officer at Parry Sound, also supplied helpful information.

deer. The limitations imposed by climate are modified greatly by the suitability of the habitat, especially along the northern limit of range. Where climate is less severe, quality of the range is by far the most important contributor to deer abundance. Fig. 1 shows the present range in Ontario which has huntable densities of deer.

Deer are browsing animals. Where mature, climax forests shade out young growth, deer will be scarce; where young forests predominate, deer will flourish. Logging and fire have been the main producers of favourable deer habitat with the former being the more important of the two.

THE PAST SITUATION*

When the white man arrived on the scene, Ontario's deer range was restricted to southwestern Ontario and to the north shore of Lake Ontario and the St. Lawrence River. After settlement, deer flourished in the agricultural areas until the 1850's when excessive land clearing, combined with persistent hunting, reduced populations drastically. By 1900, large areas of southern Ontario had virtually no deer. While deer waxed and waned in agricultural areas during the 1800's, they followed lumbering northward and by 1866 were abundant in a belt extending from the Upper Ottawa Valley west to lands north of Lake Simcoe.

By 1880, deer were abundant as far north as Lake Nipissing and they became established in the Sault Ste. Marie area about 1890, apparently having crossed from Michigan. By 1880, there were deer in eastern Manitoulin Island and, in 1890, deer were common in some townships north of Espanola and as far north of Lake Nipissing as the Timagami area. Records indicate an extremely rapid northward extension in deer range east of Lake Superior about the turn of the century, although distribution was far from continuous.

In northwestern Ontario, deer are relative newcomers and did not appear until about 1889 in the Rainy Lake region, entering the Province from Minnesota. The first deer was seen near Port Arthur in 1897, and they were present at Sioux Lookout and near Dryden by 1900. Extension of range continued in the 1900's and, by the late Thirties, scattered pockets of deer existed more than 250 miles north of the transcontinental line of the C.N.R.

By 1940, the greatest northern distribution was attained. Deer were as far north as Big Trout Lake and, east of Lake Superior, they were common in Swastika, Sault Ste. Marie and southern Chapleau and Gogama Forest Districts.

Although deer were abundant and hunting opportunities were excellent across the main eastern deer range from the time of settlement until the early Fifties, setbacks did occur. The sharpest decline occurred in the early Thirties and was probably associated with winter weather. Populations recovered rapidly, however, and excellent hunting was enjoyed in the east well into the 1950's. By then, it was evident that maturing forests were becoming less favourable to deer, and the range now can support fewer deer than in earlier times.

In northwestern Ontario, excellent hunting success was enjoyed as in the eastern range, but harsh winters in 1948-49, 1949-50 and again in 1955-56 considerably reduced the herds. Deer recovered quickly, however, and favourable habitat in this region now supports some of the highest deer densities in the Province.

In agricultural Ontario south of the Pre-Cambrian Shield, deer were scarce in the early 1900's but by 1937 nearly every county had some deer and, by the 1950's, virtually all the former range was

"Pull!" The finale of a successful hunt. In 1962, many organized camps had even better success than the 50 per cent (three for six) shown above. Staff photo.

reoccupied and deer were causing problems in certain agricultural areas.

Many changes in Ontario's deer herd occurred in the 1950's. Winters with deep snow pushed the far northern whitetails from their unstable position in very marginal habitat and, by 1960, only scattered individuals remained in Gogama and Chapleau Districts.

Further south in southern Sault Ste. Marie and Sudbury Districts and areas just north of the French and Mattawa Rivers, good deer populations remained until the late Fifties. The bubble burst in 1958-59, however, when the first of several extremely severe winters took heavy toll along this northern fringe of range. Since 1959, struggling deer herds have been hard pressed to recover in the face of one severe winter after another. This is particularly true in Sudbury and Sault Ste. Marie Districts.

In the prime eastern deer range south of the French and Mattawa Rivers, gradual changes in deer habitat have decreased the capacity of the range to support large numbers of deer. The harsh winters of 1958-59 and 1959-60 caused heavy losses in the Parry Sound and Pembroke Districts, but effects of weather were not as serious in Lindsay, Tweed and other southern districts. Maturing forests have lowered the carrying capacity of the range, and there is no doubt that deer are less numerous than in the 1930's and 40's.

THE PRESENT SITUATION

To the hunter, a change in deer abundance means an increase or decrease in the chances of "bringing home the venison". The current situation can best be described by outlining last year's deer hunting success across the Province.

Hunting success is greatly influenced by weather during the hunt. Whether deer are made available to the hunter often depends upon co-operation from the weatherman. Weather influenced last year's hunt markedly and produced excellent hunting across most of the eastern deer range, while it lowered success in northwestern Ontario.

The following is a summary of the 1962 deer hunt by Forest Districts from west to east.

Northwestern Ontario, including Fort Frances, Kenora and southern Sioux Lookout Districts, continued to have the best deer hunting the Province had to offer. The habitat is favourable, and mild winters for the past few years have resulted in bumper crops of deer in this region. Hunter success for the above districts, obtained from hunter questionnaires, was 49.6, 52.3 and 40.5 per cent, respectively. Unfavourable weather during the hunt lowered success in Kenora and Fort Frances slightly from the exceptionally high success enjoyed the preceding year.

In Port Arthur District, an increasing deer herd is reflected in an increase in licence sales. A mailed survey of hunters indicated that 4,190 licensees took 976 deer, a success rate of 23.3 per cent. This is higher than the 1961 figure of 20.5 per cent, calculated on the same basis.

In Sault Ste. Marie District, the herd remains at a low level. Success for all hunters contacted was still a low 10.1 per cent, compared to 17.1 per cent for 1961, although 338 camp hunters reported a success rate of 48.5 per cent, only a slight reduction from 1961. District staff feel that the total kill was reduced due to the shorter season, decreased licence sales and lack of snow during the hunt.

On the Sudbury District mainland, hunting success at 12.7 per cent was slightly better than in 1961 but still was very low. Sudbury District undoubtedly has suffered more than any other area

from severe winters in recent years.

In the North Bay area, good hunting weather and a recovering deer herd pushed hunting success from a low 8.3 per cent in 1961 to 17.2 per cent last fall. Better hunting was reflected also in the number of days of hunting effort required to bag a deer—24.4 man-days compared to 43.2 in 1961. Reproduction was good and fawns represented 38.7 per cent of the kill, up over seven per cent from 1961.

On Manitoulin Island, hunting was considerably improved; success rose from 21.2 to 25.3 per cent while hunting effort fell from 18.0 to 15.7 man-days per deer. Fawns comprised 35 per cent of deer checked, up four per cent from 1961. Yearlings were also in good supply—a high 47 per cent of all adult deer.

In Parry Sound District, hunting weather was only fair during the first week but was much better during the second. Had this been reversed, the much heavier hunting pressure which occurs the first week would have undoubtedly increased the kill. Hunting success as tabulated at checking stations was 22.4 per cent, down slightly from the 23.7 per cent recorded in 1961. A torrential rain during the second Saturday of the hunt made the operation of check stations difficult and influenced the accuracy of information from this source. Reports from 371 deer hunting camps indicated that this group, comprising 3,524 men, enjoyed a success rate of 39.6 per cent, compared to 39.8 per cent in 1961.

Deer hunting success in Lindsay District was much improved in 1962. Reports from 361 hunt camps comprising 3,513 hunters indicated a 50.1 per cent success, the highest since 1958. Success as tabulated at highway check stations was 23.5 per cent, a slight reduction from 1961. Again, check station operation suffered from the heavy all-day rain during Saturday of the first weekend. Information was also

The harvest information required for sound deer management is collected annually throughout Ontario. Here, Lands and Forests officers explain to a young hunter how the age of a deer is determined. Photo by T. Jenkins.

	LINDSAY	TWEED	KEMPTVILLE	PEMBROKE	PARRY SOUND	NORTH BAY	SUDBURY	MANITOULIN IS.	SAULT STE. MARIE*	LAKE HURON	LAKE HURON BRUCE PENINSULA	LAKE SIMCOE	LAKE ERIE	KENORA*	FORT FRANCES*	SIOUX LOOKOUT*	PORT ARTHUR*
INFORMATION FROM FIELD CHECKS OR MAIL SURVEYS																	
1960																	
Total hunters checked	3769	4267	-	1617	7670	2255	1268	2997	4170	-	1176	284	-	114	404	-	-
% Hunter success	24.1	23.4	-	22.6	23.4	7.0	14.4	25.4	3.9	-	17.7	31.7	-	52.6	46.3	-	-
Days per deer	18.3	21.7	-	22.8	19.9	48.1	36.1	15.6	42.4	-	22.7	7.7	-	10.5	13.1	-	-
1961																	
Total hunters checked	3838	4146	-	1673	8479	1942	1034	2476	410	-	2068	1201	-	608	1025	494	3578
% Hunter success	25.4	20.5	-	18.1	23.7	8.3	9.2	21.2	17.1	-	14.3	22.3	-	-	57.1	35 8	20.5
Days per deer	17.6	24.1	-	30.7	20.4	43.2	44.1	18.0	18.9	-	23.9	10.3	-	10.5	9.1	16.9	29.7
1962																	
Total hunters checked	4075	3578	-	1161	5996	1949	1249	2406	2321	1941	1480	571	7882	4103	1206	877	4190
% Hunter success	23.5	24.5	-	26.6	22.4	17.2	12.7	25.3	11.6	10.7	15.2	23.6	10.3	42.3	49.6	40.5	23.3
Days per deer	18.4	18.9	-	17.5	20.8	24.4	20.7	15.7	-	12.2	23.7	10.9	5.3	14.5	14.6	19.3	-
INFORMATION FROM HUNT CAMPS																	
1960																	
Camps reporting	171	217	211	247	173	-	-	32	-	-	-	-	-	-	-	-	-
Total hunters	1508	1606	1536	1891	1730	-	-	253	-	-	-	-	-	-	-	-	-
% Hunter success	47.0	48.4	40.5	36.0	43.6	-	-	37.2	-	-	-	-	-	-	-	-	-
Days per deer	13.6	13.3	14.5	17.5	13.6	-	-	-	-	-	-	-	-	-	-	-	-

1961																	
Camps reporting	171	304	252	249	247	-	19	78	35	-	-	-	-	-	-	-	-
Total hunters	1458	2380	1850	1899	2296	-	98	434	246	-	-	-	-	-	-	-	-
% Hunter success	48.9	40.1	36.9	26.1	39.8	-	7.1	25.3	57.7	-	-	-	-	-	-	-	-
Days per deer	12.6	15.5	15.9	23.4	15.2	-	66.9	-	16.0	-	-	-	-	-	-	-	-
1962																	
Camps reporting	361	354	254	235	371	-	-	-	63	-	-	-	-	-	-	-	-
Total hunters	3513	2803	2105	1705	3524	361	276	-	338	-	-	-	-	-	-	-	-
% Hunter success	50.1	47.8	35.0	42.0	39.6	15.8	14.8	-	48.5	-	-	-	-	-	-	-	-
Days per deer	11.5	11.8	13.3	14.1	14.6	39.9	33.3	-	17.6	-	-	-	-	-	-	-	-

* Indicates estimates from mailed surveys of deer hunters; this information cannot be compared on exactly the same basis with other districts which obtained information from checking hunters in the field at road checking stations.

biased by the fact that mild weather during the first week forced many hunters to take their deer out early. These deer were then missed during the weekend road checks. For these reasons, hunt camp information is the more reliable for 1962.

In the Tweed District, snow cover during the first three days of the season provided excellent hunting conditions. Since the snow was crusty it was difficult for deer to move without detection and 58 per cent of all deer harvested fell to the gun during this short period. Success as tabulated at checking stations was 24.5 per cent, up four per cent from 1961. Organized camp hunters reported their success at 47.8 per cent, a healthy gain from the 40.1 per cent reported in 1961. Weather and an excellent fawn crop contributed to the good hunting. Fawns comprised 34 per cent of all deer checked, an increase of almost five per cent over 1961, and the highest percentage checked since 1955.

In the Pembroke District, weather co-operated and blanketed the ground with up to six inches of snow prior to the season; this snow remained throughout the first week and produced excellent hunting conditions. Deer not usually available to hunters moved out of Algonquin Park to their traditional yarding areas during the season, and hunters benefited accordingly. Overall hunting success as recorded at checking stations was 26.6 per cent, a gain of 8.5 per cent over 1961. Hunter-days required to bag a deer fell from 30.7 in 1961 to 17.5. Good hunting also was reflected in organized camp success which was 42.0 per cent, compared to only 26.1 per cent the previous year.

In Kemptville District, 2,105 hunters reported a success of 35.0 per cent which was slightly lower than in 1961. Hunting was still good, however, and the effort required to bag a deer

averaged only 13.3 man-days over the district. Some areas produced over 50 per cent hunting success. In this district, almost all hunting is carried out on private lands by hunting parties which usually include one or more landowners.

In Simcoe District, organized hunters on Crown lands of Matchedash and Wood Townships fared somewhat better last year while casual success fell. Almost half the organized hunters took home a deer while only one in five casuals was as fortunate.

In Huron District, the regular six-day season prevailed on the Bruce Peninsula. At the Wiarton checking station, 1,480 hunters were interviewed. Hunter success was 15.2 per cent, up slightly from 1961.

In agricultural southern Ontario, 15 counties were open for a three-day, shotguns-only season which was most successful. In Erie District, several counties had their first season in several years. Success for 1,966 hunters checked was 15 per cent. A large proportion of the hunting parties included one or more landowners and the season appeared to be a popular one in every respect. In three-day-season areas in Huron District, poor weather reduced the kill; the success of 1,941 hunters checked was 10.7 per cent, with 12.2 days of hunting required to take a deer.

A three-day season in Lindsay District in Durham and Northumberland Counties was also successful, although many hunters complained that deer were always out of range of their shotguns! One old buck taken in Cavan Township weighed in at 285 lbs., dressed weight, and was probably the largest buck taken in Ontario last year. We would be interested in hearing of larger ones in any case.

In summary, good hunting weather, combined with the recovery of winter reduced herds, produced improved results over much of the Province.

THE FUTURE

Forecasting the success of deer hunters is a risky business. Although the relative abundance of deer may be known, weather conditions, so important in determining the harvest, are unpredictable. All that can be safely done is to predict what the available crop will be.

For 1963, deer hunting prospects for Kenora, Fort Frances and southern Sioux Lookout Districts should be excellent. Mild winters for the past several years have allowed the herd to increase at a high rate. These animals should be harvested since a severe winter could reduce the herd as in 1950 and 1956.

In Port Arthur District, an increasing herd should provide more hunting opportunities than in 1962.

In the Sault Ste. Marie area, the deer herd is recovering slowly and slightly more deer should be available next fall.

Prospects in Sudbury District are bleak. The winter just past was another cruel one and snow depths reached 30 to 40 inches across the district. Lands and Forests staff found up to 91 dead deer per square mile on their spring deer yard surveys, and it is apparent that even fewer deer will be available next fall.

North Bay herds were not as severely affected during the past winter and there should be at least as many deer available as in 1962. Another good fawn crop this year, along with reasonable hunting weather, could further improve hunting success.

In Parry Sound District, the age composition of the 1962 kill indicated that the herd is recovering from the effects of mortality in past winters.

The 1962-63 winter was far from an easy one for deer in this district, however, and only a slight increase, if any, in hunting success is expected in 1963.

Over the rest of the main eastern deer range in Lindsay, Tweed, Pembroke and Kemptville Forest Districts, the past winter was not a severe one for deer. Although snow was deep, below-average temperatures kept the snow from compacting for most of the winter so that the movement of deer was not restricted. In these areas, weather was a significant factor in producing better hunting last fall. If only average weather conditions prevail during the 1963 hunt, success may be somewhat lower than in 1962.

In agricultural areas, little change in deer populations should have occurred over the past year.

Deer hunting prospects over the long term depend upon numerous factors which include changes in quality of deer range, winter weather and hunting pressures. Without doubt, the weakest link in deer management is the condition of winter yarding areas. The carrying capacity of deer yards can be maintained or raised only by proper timber management. Programs to locate, map, evaluate and manage deer yards are underway in every district where deer are important to the hunter. In several districts, yards located on Crown lands are being imporved for deer through projects financed by the Department. Commercial timber operators are being encouraged to modify their cutting operations in deer yards so that optimum browse conditions for deer will result, without the destruction of cover values. In the years to come, the availability of deer will depend in large part on timber management practices and this Department's ability to maintain or improve the carrying capacity of winter yarding areas for deer.

By this time of year, deer hunters will be planning their hunting trip with a nervous eye on the calendar, and many will be looking forward to the comradeship and good time of hunt camp life. In "The White-tailed Deer" published by the Conservation Department of the Olin Mathieson Chemical Corporation, camp life is aptly described in the "Palace in the Popple", four stanzas of which are reproduced here with their kind permission.

Palace in the Popple

It's a smoky, raunchy boars' nest
With an unswept, drafty floor
And Pillowticking curtains
And knife scars on the door.
The smell of a pine-knot fire
From a stovepipe that's come loose
Mingles sweetly with the bootgrease
And the Copenhagen snoose.

There are work-worn .30-30's
With battered, steel-shod stocks,
And drying lines of longjohns
And of steaming, pungent socks.
There's a table for the Bloody Four
And their game of two-card draw,
And there's deep and dreamless sleeping
On bunk ticks stuffed with straw.

No where on earth is fire so warm
Nor coffee so infernal
Nor whiskers so stiff, jokes so rich,
Nor hope blooming so eternal,
A man can live for a solid week
In the same old underbritches
And walk like a man and spit where he wants
And scratch himself where it itches.

I tell you, boys, there's no place else
Where I'd rather be, come fall,
Where I eat like a bear and sing like a wolf
And feel like I'm bull-pine tall.
In that raunchy cabin out in the bush
In the land of the raven and loon,
With a tracking snow lying new to the ground
At the end of the Rutting Moon.

SHARP-TAILED GROUSE IN THE FORT FRANCES AREA

by J.G. Miller
Conservation Officer, Fort Frances Forest District
(Photos by H.G. Lumsden)

The sharp-tailed grouse is one of three gallinaceous (chicken-like) birds in the Fort Frances area. Hunters can have an exciting and fruitful day in the field pursuing these birds. In spring during their mating season, any nature lover willing to watch can be provided with a spectacle far more interesting than any T.V. variety show as the males strut and dance.

A few years ago, sharptails were mostly shot incidentally by ruffed grouse hunters who would see a flock along the side of the road. More and more hunters have been observed lately, walking the fields and scrub poplar for the sole purpose of hunting these "prairie grouse". Pointing dogs, brought in by non-resident hunters from the south, are also making their appearance.

When the hunting season first opens (latter half of September) the sharptails are still in small family coveys. At this time they will sit fairly well, whether they are pursued by the hunter "walking them up" or with pointing or flushing dogs. When they are flushed, they usually do so within gun range and will land nearby. Later on in the season, however they tend to become very wild and generally flush well out of gun range and lose themselves beyond the tree line. This may be attributed to a number of factors. Young birds are starting to mature; flocking tendencies start around mid-October; the weather usually becomes cold, cloudy and windy.

The sharptail is a fairly large bird (approximately two pounds) and is not noted for its speed. When it is hunted in open fields and flushed within gun range, its sporting qualities do not compare with those of the Hungarian partridge whose size makes it a tricky target. However, in the young poplar growth so prevalent in this district, where he is often found during the heat of the day, he becomes a game bird in the fullest sense. As he rises with his characteristic cackle and wings his way through the brush, he will test the most experienced gunner's ability.

The majority of the older residents state that the "prairie grouse" first made their appearance in this district in the early nineteen hundreds. The large forest fires of the late eighteen and early nineteen hundreds, and the clearing of large tracts of land by the settlers, both contributed to suitable habitat (open grass land and shrubs) for the sharp-tailed grouse. The railroad, which was put through the district in 1902, was used to transport grain from the west to the Lakehead. This may have hastened the increase of these birds. Many oldtimers relate that they saw their first "prairie grouse" along the tracks where grain had leaked from the old wooden box-cars. They also recall that in the late thirties the population was much larger than it is at present. This could have been the initial influx of these birds which gradually levelled off, or it may have been the result of a migration south of the northern sharp-tailed grouse which is said to have occurred at this time.

The sharptail is primarily a bird of open country. A large part of its life revolves around the dancing ground. Here the males put on an elaborate

A male sharp-tailed grouse.

display that is one of the most absorbing exhibitions in all of nature. Dancing grounds are usually located on a cleared knoll close to shelter and food. They vary in size and may be used by as many as seventy-five birds. Males may be found on them throughout most of the year with the exception of a few months in the dead of winter and the hottest part of the summer.

During the mating season (mid April–mid June) the dancing display reaches its peak. Each male has his own little segment of the dancing ground and defends it against any other male intruder. The males occasionally fly or jump a short distance off the ground in an attempt to gain attention. Their

Sharptail dancing grounds are usually located on cleared grassy knolls. Here, males stage their spectacular performance while the hens look on.

wings are held out and down in a drooping fashion as they dance. The stiff tail feathers produce a rattling sound as the tail is alternately spread and shut, accompanied by a rapid stamping of the feet as the birds move about in figure eights. Purple air sacs, one on either side of the neck, may be distended as the bird makes a "hooting" sound. The yellowish-orange eyebrow of the male is more pronounced at this time, adding colour to the performance as he threatens other males and courts females.

The female generally builds her nest in some protective cover near a suitable feeding area and within three-quarters of a mile of the dancing ground. She lays from twelve to fourteen olive, brown speckled eggs. The incubation period is twenty-one to twenty-two days during which the female is left alone for the male is polygamous and and does not assist with the nesting or hatching.

Brooding ordinarily occurs sometime in June. The chicks feed largely upon insects (grasshoppers and crickets

especially) during the first weeks of their lives. Later on, they begin to feed on greens, seeds and buds. Their mortality rate is comparable to that of other species. On the average, two-thirds of the chicks reach maturity. The highest rate of mortality occurs in the first weeks after hatching.

Throughout the summer, the birds stay in small family coveys. In mid-October, they congregate in large flocks which tend to show a partial segregation of the sexes.

The summer diet of the sharptail is varied but in winter they rely upon buds and catkins of birch, aspen and hazel.

Extremely cold temperatures do not seem to effect them. During the winter, they can be found roosting under the snow.

Management of this species in the district has consisted mainly of population inventory. For the past several years, the locating and counting of individual dancing grounds has been carried out to get a reliable estimate of population fluctuations from year to year.

New dancing grounds were located by driving along township roads early in the morning during the spring, stopping at intervals and listening for the sounds made by the dancing males. On favourable mornings, the sounds were audible for at least a mile. This process was very time-consuming, and other commitments limited the available time. Also, large areas of the district not intersected by roads were missed using this method. Early in the spring of 1962, it was observed that, with suitable snow conditions, dancing grounds were visible from aircraft. Eighteen new grounds were located from the air in approximately half a day of flying time.

For three consecutive years (1960-62) the numbers of males were counted on six dancing grounds in Carpenter Township. In an effort to get a truer estimate of the trends in the population, it was decided to count males on six dancing grounds throughout the district rather than in only one township. The six dancing grounds chosen for this purpose were the largest ones situated on land under agricultural development where habitat conditions would remain relatively constant. We hope this method will be more accurate and less time-consuming. We are trying to develop a technique of estimating accurately the number of males on the dancing ground from the air. Two methods show some potential.

(1) estimating the number of birds from the size of the area packed down in the snow.

(2) using "blown up" aerial photographs which may show each individual bird's territory on the dancing ground.

If an acceptable technique is developed, every dancing ground in the district could be counted in only a day or two.

Brood counts were done in previous years to supplement counts on dancing grounds. We feel that counts on dancing grounds can provide a sufficiently reliable index on which to base regulations, except possibly in an exceptional year like 1962. A heavy rainfall of 3.93 inches fell that June and it was feared the mortality rate of the chicks would be high. Unfortunately, shortage of staff did not permit a brood count but, under these conditions, such a count might well be warranted.

In 1960 and 1961, we attempted to live-trap sharptails on their dancing grounds using a cannon net.

We had hoped to carry out a banding programme and also secure birds for stocking in eastern Ontario. Although

Two cocks square off for ritual fighting on their dancing ground.

a few birds were captured for banding, the cannon net was not practical. The number of birds injured was too great, and it was improbable that we would obtain on the dancing grounds a sufficient number of females for stocking purposes. Consequently, in the fall of 1962 it was decided to try using a funnel-type trap in conjunction with baiting. This was more successful.

Five feeding stations were established in mid-December. Three were in the vicinity of Fort Frances and two near the town of Rainy River. Each station consisted of a platform (raised above the snow) on which oats and cobs of corn were placed. Each was replenished periodically. Five 8′ by

One position in the spectacular dance of the cock sharp-tailed grouse.

12′ by 4′ wire traps were constructed in the workshop. Each side was built separately and a funnel placed in one of them. The funnel was constructed so the opening was adjustable. When it appeared that a regular feeding routine had been established by the birds, the unassembled traps were placed near the feeders. Approximately 150 birds were using the feeders at this time. Gradually over a two-week period, the traps were assembled one side at a time around the feeding stations, and the funnel left open. The birds continued to utilize the feeder.

We planned to trap the birds at the end of March when their mating instinct would be strong so that, when trans-

planted to eastern Ontario, they would establish dancing grounds right away. By the end of February, however, fewer and fewer birds were using the feeders. It was then decided to close the traps immediately. Forty-one sharptails were caught but only fifteen of them were females. We had hoped to obtain a preponderance of females or at least an equal sex ratio. The birds were held in a large garage until all were collected. Only one bird died during the whole operation. They were released in the Lindsay District.

By the end of May, the birds had established two dancing grounds in the release area.

The experience and knowledge we gained will aid us greatly with future stocking programmes.

The popularity of the sharptail as a game bird is increasing each year in this district. It is still too early to make any predictions, but the dancing ground counts last winter indicate no drastic change in the population this year.

Future plans call for additional stocking in other parts of southern Ontario. If this is successful, the sharptail will provide a valuable addition to the upland game at present in areas where there is great demand for this type of hunting.

A natural spawning bed of lake trout, exposed by drawdown of water level in the late fall. Many eggs were located in the rocky area. Photo by N.V. Martin.

LAKE TROUT SPAWNING

by N.V. Martin
Research Scientist, Southern Research Station

Undoubtedly one of the most fascinating aspects of fishery biology is the study of the spawning of fishes. This is, with many species of fish, one of the few opportunities we have to see them in numbers in their natural surroundings. Apart from the aesthetic aspects of such studies, they are extremely important in our understanding of the dynamics of fish populations. It may be at this critical period in the life history of the fish that the success or failure of the fishing trip in future years will be decided. Unfavourable conditions at this time may virtually eliminate an age class or one year's production. Conversely, propitious circumstances may produce a bumper crop and a high rate of fishing success when the progeny from a successful spawning enters the fishery.

It has been only in the last 15 years or so that intensive studies have been carried out on the reproduction of lake trout. There are a number of reasons for this. Lake trout spawn at inclement times of the year in windy, rocky areas. They spawn at night which makes observation of their behavior even more difficult. In many lakes, they spawn in deep water, and information has had to be obtained through indirect means such as gill netting. Incubation of the eggs and hatching take place in the dead of winter under the ice. However, in spite of these difficulties, a considerable fund of knowledge of the reproduction of lake trout has been built up from studies in various areas. Let us, then, briefly review some of this information with particular reference to the work in Algonquin Park.

The lake trout is generally a fall spawner as are many so called "cold water species". In the inland lakes of Ontario, spawning usually occurs in late October. The trout usually spawn on wave swept shoals. Such areas are free from silting and well aerated. Favoured locations are around rocky points and islands and on submerged shoals away from shore. The rock is usually a broken rubble which may vary in size from one or two to six or eight inches in diameter. The depth at which spawning takes place usually varies with the size of the lake. In small lakes, the backs of the trout may break water although most of the spawning is in four or five feet of water. In larger inland lakes, they may spawn in water as deep as 10 or 15 feet. There is probably some relationship between size of the lake and the depth at which shoal areas are relatively clean and suitable for spawning.

As spawning time approaches, the male trout move on to the shoal areas and clean the bottom of silt and detritus by sweeping with their tails and sides. The smaller males tend to come on to the beds first each year. Soon after, the females appear and the male begins his courtship behaviour. This consists of butting the female with his snout, or zig-zagging back and forth underneath the female, brushing her in the region of the vent with his dorsal fin. No fixed pairing of the sexes occurs, the usual sight being a maze of fish randomly swimming back and forth over the spawning area. The males at this point are easily distinguishable

Typical lake trout spawning site in Shirley Lake, showing exposed spawning beds. New artificial spawning beds are located off the point. Photo by N.V. Martin.

Loading a raft with broken rock for transportation to the artificial spawning bed sites in Shirley Lake. Photo by N.V. Martin

as they have shiny dark bands along the sides and around the heads.

As has been pointed out, spawning takes place largely at night. Just at dusk, the trout move on to the beds and remain there in numbers until about 10 or 10.30 p.m. Observations have been carried through until about 1 a.m. but only a few trout are seen at these later hours. The length of the spawning period has varied from a few days to nearly four weeks in Algonquin Park lakes. Rough, cold, dark and windy nights may shorten the duration of spawning while bright, calm, warm

nights tend to prolong it.

The actual egg deposition has never been seen by the writer. However, the eggs must immediately filter among the rocks as they have never been seen on the surface of the spawning shoal. A vigorous stir with an oar or paddle will, however, bring them floating out by the hundreds. This immediate disappearance of the eggs in the interstices of the rocks is apparently how Mother Nature compensates for the fact that the lake trout never builds a nest or covers or guards the eggs.

Some eggs do fall prey to other fishes, but we believe that, if the bottom is suitable, this loss is negligible as compared to the total egg deposition. There are always great numbers of bullheads around lake trout spawning beds in Algonquin Park, and round whitefish are also found to feed on lake trout eggs there. The much maligned sucker is not found to be a serious predator in this area although evidence from other places suggests it may be.

By early November, the spawning beds are again deserted and the lake trout eggs begin their long, slow incubation. The length of this period may vary somewhat with the year but in Algonquin Park lakes it usually lasts until late March.

Two other factors are known that may be significant in the survival of lake trout eggs. One of these is the fungal infection of the eggs in the beds. Numerous observations of spawning beds in the winter months indicate the fungus *Saprolegnia* may be very destructive. The prevalence of this fungus varies from lake to lake and in a given lake from year to year.

Another factor is the fluctuation of water levels. Many Ontario lakes are drawn down each fall. Studies carried out on a number of lakes in Algonquin Park indicated that direct loss of eggs for this reason was not serious in the lakes examined. However, these studies were limited. Such drawdowns may limit the extent of available areas suitable for successful spawning.

To compensate for such a loss, artificial spawning beds were constructed in Shirley Lake in Algonquin Park. About 200 tons of rock were trucked to this lake and transferred to huge rafts. On the basis of our previous knowledge of what lake trout required in respect to such things as location of beds and type of bottom, large spawning shoals were constructed at depths below drawdown levels at three points in the lake. Only one of these was used the first year, probably because some nearby original spawning bed was still under water and this served to attract the fish. The number of spawners has increased from 10 or 15 to over 100 in this area.

The second and third areas were not used. The next year, attempts were made to divert trout to the second area by blocking off the first; penning ripe fish over the second; transferring rock the used area; and by a variety of other means. The third bed was left alone as a sort of control.

These efforts were still unsuccessful and the question arose as to whether lake trout have a homing behaviour, returning to the same spawning bed year after year. The investigation was transferred to another lake where different coloured tags were placed on lake trout on a series of spawning areas. Observations of the lake trout in a given year and over a period of years indicated they returned to the same bed each time, even though some beds were only a few hundred yards apart.

Based on this knowledge, eyed-

A diver returns to the surface after winter observations of egg survival on lake trout spawning beds in a lake in Algonquin Park. Note the metal baskets, previously buried in spawning bed to collect eggs. Photo by Jack Mitchell.

eggs were seeded on the second of the artificial spawning beds in Shirley Lake in an effort to establish a spawning population. The next year, however, adult trout used this bed for spawning. A year later, the third or control area was also used. No clear-cut answer is evident as a result of these manipulations but it appears that, although lake trout will eventually use new spawning areas if they are suitable, the process can be hastened to some extent. At any rate, the size of the spawning population was substantially increased in Shirley Lake. This study points up how a basic research study of fish spawning can lead to a management technique.

As has been pointed out, the production of lake trout is extremely variable. Some of the year classes in Algonquin Park lakes are five or ten times larger than others. It is not unlikely that the success or failure of the year classes and, hence, the quality of the fishery, is related to the spawning and the early life history of the lake trout.

TAGGING MOOSE BY HELICOPTER

by John Goddard
Biologist, Geraldton Forest District
(Photos by D.W. Simkin)

In Ontario, a relatively high percentage of the area occupied by moose is inaccessible to hunters. As a result, hunting this large and heavy mammal is confined mainly to existing roads and accessible waterways. In recent years, the aeroplane has done much to relieve the concentrated hunting in these areas, and this has helped to distribute hunting pressure. However, the use of aeroplanes to hunt moose is beyond the economic means of most people, and the majority of hunters concentrate on areas which are accessible by truck, jeep, car, boat or bombardier.

There are many areas in the Province where this concentration of hunting occurs, and in some districts large numbers of moose are shot in certain specific locations each year. It is believed that the majority of animals are shot within short distances (perhaps one mile) of the access route. From the standpoint of moose management, it is extremely important to determine whether or not moose wander sufficiently from remote, virtually unhunted regions and repopulate the heavily hunted areas which lie immediately along the access routes. It is not unreasonable to suspect that moose move into areas where competition for food and space is reduced by heavy hunting, providing the food supply is adequate. However, successful reproduction in moose is related to the physical condition of the animal which, in turn, depends on the food supply and the conditions of the habitat.

In the heavily hunted areas, moose are probably kept to numbers which the particular range can support and, as a result, moose on this range may be in better physical condition than the moose in unhunted, overbrowsed areas. If they are in better physical condition, the moose in these heavily hunted areas may produce more calves, and the incidence of twin births may be higher than among moose in unhunted, overbrowsed areas. The reproductive potential of the surviving moose may be sufficient to replace the loss by hunting. On the other hand, it may well be that moose are being overharvested in the areas close to access routes, and continuation of good hunting will depend on the rate at which moose move in from the remote unhunted areas.

In an attempt to solve this problem, and to trace movements of moose within specific localities of the Province, moose have been tagged by placing a numbered metal clip on one of their ears, and certain data have been collected and recorded. The best way to trace movements, and obtain information on the habits of wild animals, is to tag or mark individuals so that they may be recognized later. From the results of these tagging operations, it is hoped that some clearly defined data on the movement habits of this mammal will become available. It is also anticipated that much useful and interesting information on the life history of the moose will be obtained from the study. Such data are basic for sound management of this species.

In Ontario during the winter months, moose usually feed on twigs, shoots and small branches of species such as white birch and balsam fir but, during

late June and early July, a large proportion of the diet consists of various species of aquatic plants such as the yellow pond lily and eel grass. To obtain these plants, moose wade out into shallow lakes and feed during the the early morning and late evening. It was found that, at this time of the year and under certain conditions, a moose could be approached with a helicopter so that it was forced to swim into deep water where it could be approached close enough to attach a metal tag and a coloured streamer to one of its ears. In 1959, the first moose were tagged by this method in Ontario.

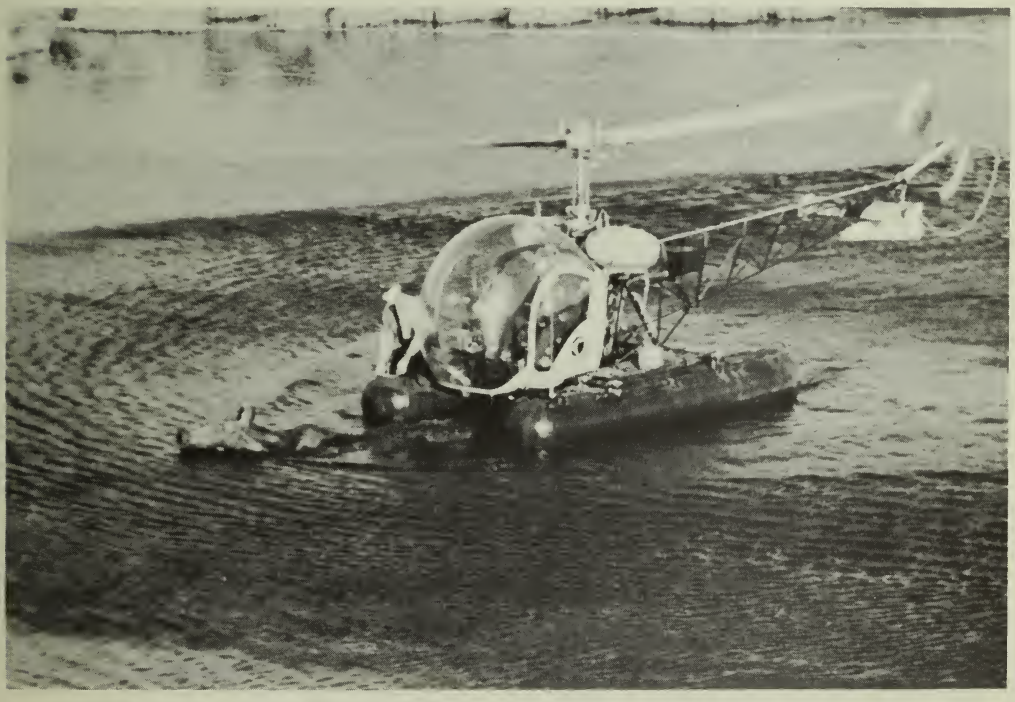
Some moose have been tagged with only a metal tag; information gained on an animal's movements will depend on whether or not the tag is recovered by some successful hunter. Coloured streamers have also been fastened to the ear of some moose; with the aid of binoculars, these streamers can be observed from considerable distances so that information can be collected on the animal's movements at various times of the year. When the moose is tagged, a notation is made of the sex of the animal and the ear to which the streamer is attached. It is possible, therefore, to use the same colour combination on several different animals and still identify them at certain times of the year by noting their sex and the particular ear to which the streamer is attached.

The actual tagging operation and the observations made of the behaviour of moose are very interesting. A helicopter is used to survey the study area. Flying at an altitude of between 800 and 1000 feet, the region is cruised at random with the crew watching for moose in the water. As soon as a moose is spotted, the pilot places the helicopter in "auto-rotation" by which the craft descends very rapidly, hovers, and eventually alights on the water between the shore and the moose. Just before the pilot touches down, the tagger climbs out and lies flat on the starboard pontoon, leaning as far forward as possible. The pilot taxies the helicopter so that the pontoons straddle the swimming moose. The tagger grabs the nearest ear of the moose and fastens the tag with a pair of livestock pliers.

The time from when the helicopter lands on the water to when the moose is tagged may vary from eight seconds to three-quarters of a minute depending on such factors as depth of water, width of stream channel, location of moose, etc. The pilot is constantly observing the procedure and can lift the helicopter in an instant if the animal suddenly approaches shallow water. There is usually ample warning of this because, as soon as the hooves of the moose touch the bottom, mud, sand, and pieces of plants are churned upward and cloud the water around the swimming animal. When the pilot sees this, he may lift the machine off the water and attempt to herd the moose back into deeper water. If large numbers of moose happen to be out feeding in the water at the same time, this method of tagging moose can be extremely efficient. In one area of the Province in 1960, fifty moose were tagged in ten hours and thirty-five minutes of flying time, thus averaging nearly five moose per hour.

If a moose is spotted well out from the shoreline of a lake, it is advisable to make a wide circle, steadily losing altitude, and come around to face the animal "head on" at as low an altitude as conditions will permit. As long as the moose is located a fair distance from the edge of the lake or swamp, it will invariably head towards deep water.

A helicopter hovers above a moose to herd it into deeper water.



A helicopter moves into tagging position in deep water, well out from shore.

Corralled between the two floats, the moose is now in position for tagging.

shore, it will run for the trees, and attempts to head it off by flying along the shore are generally not successful.

Some of the lakes where moose are spotted have been subjected to marked fluctuation in water levels. The dead trees that result may project upward as high as forty feet in the water off shore. These snags usually consist of the dead bole, without branches, and they are a very effective barrier against low flying. Moose are sometimes spotted in these lakes, frequently very close to the shoreline. In such a situation, it is, of course, impossible to manoeuver the machine lower than fifty feet, and the moose will stand at the edge of the lake and gaze at the circling helicopter. It may "mill around" or run up and down the edge of the lake, but it will not go into the water. Some animals do not show any sign of alarm.

Once a moose decides to run for

Conservation Officer E.H. Stone clamps a tag on the moose's ear.

cover, it usually heads in a direct line, and even in open swamps, where it is possible to fly very low, it is impossible to head it off and herd it into the water. Calves are particularly determined in this regard, but I have noticed this behaviour among adult moose on at least twelve occasions. Even when the helicopter is flown with the front of the port pontoon about five feet from the animal's head, the moose invariably continues towards its objective, and it is impossible to turn it. On approaching heavy cover, the helicopter is, of course, forced to "back-up", and the animal may run right under the pontoons and disappear into the trees. Once the moose has gained the heavy cover, it usually retreats further and further into the denser parts, regardless of the altitude or the position of the helicopter.

In some locations, moose are frequently seen in scrubby swamp areas

among sparse growths of such trees as tamarack and black spruce. If the moose is located fairly close to a lake, an attempt is made to herd it into the lake, but this is usually unsuccessful. I remember one occasion when we attempted to herd a cow moose toward a nearby lake. The cow was observed in an open swamp area from an altitude of approximately one thousand feet. On closer examination, we saw that she had two calves, and, despite our rapid descent and approach, she remained in the same position and held her ground. A scrub growth of tamarack prevented us from descending lower than thirty feet, and the moose refused to move. We hovered about thirty-five feet above her for fully five minutes, and she eventually walked right underneath us and disappeared into thicker cover with the two calves walking very close to her flanks.

When feeding on aquatic vegetation, moose often place their head beneath the surface of the water to reach the lower parts of the submerged plants. During the summer of 1962, I spotted one cow from an altitude of 800 feet; when sighted in the binoculars, her head and entire neck were completely under water. Her head was still under water when we were hovering about fifty feet behind and above her. In an instant, she felt the powerful downdraft from the helicopter and raised her head from underneath the surface of the water. She whirled around and then headed rapidly into deep water where she was quickly tagged.

Once the moose is in deep water, it is relatively powerless, and the actual tagging is a very simple operation. When one initially grasps the ear, the animal flattens both ears against the neck and strains forward a little. After about three or four seconds, the head can be hauled backwards with comparative ease to facilitate placing the tag in the correct position on the ear. Even large bulls offer little or no resistance when the antlers are hauled backwards. The animal seems to be intent only on swimming away, and there is no attempt to rear the head or strike backwards. However, on one occasion, one very large bull submerged completely for a short period of time; when he eventually decided to surface, he was promptly tagged by a member of the crew.

Several studies of certain aspects of the biology of moose have been conducted in recent years, but scientific information concerning their movements and ranging habits has been slow to accumulate. The questions often asked are: Do moose stay in one particular area during most of their lifetime or do they wander over wide areas? Will moose wander from remote areas and repopulate the heavily hunted areas close to access routes, or do they have rather restricted movements from one year to the next? The answers to these questions, and many others, can be obtained from the results of tagging studies; they are of basic importance to sound management of the species. In addition to providing basic information for moose management and conservation, it is also anticipated that the study will advance and further the biological knowledge and understanding of this magnificent game animal.

RIGHT--Reduction of an early proclamation. This copy was made from the issue mailed on July 15th, 1860, to John Blake, Esq., Registrar's Office, Niagara Falls, Ontario. (The envelope carried a half-penny stamp.)